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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/695,813	10/30/2003	Chang-Ho Liou	LI0U3010/EM	6894

23364 7590 08/28/2007
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EXAMINER

MOON, SEOKYUN

ART UNIT	PAPER NUMBER
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2629

MAIL DATE	DELIVERY MODE
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08/28/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/695,813

Applicant(s)

LIU ET AL.

Examiner

Seokyun Moon

Art Unit

2629

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 July 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. The Applicants' arguments with respect to the rejection of claim 1 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. **Claims 1-4 and 7** are rejected under 35 U.S.C. 102(e) as being anticipated by Lee (US 2003/0085859).

As to **claim 1**, Lee teaches a driving circuit [fig. 1] for solving color dispersion [par. (0008) lines 1-3; generating separate sets of gamma reference voltages for respective R, G, and B colors prevents color dispersion], implemented in a flat panel display (“LCD”) [par. (0008) lines 1-3] with a plurality of pixel cells (the pixels included in the LCD), the driving circuit comprising:

a coding unit (“*timing controller*”) [par. (0027) lines 1-5], to generate a plurality of coded data (“*digital gamma data*”) according to a plurality of characteristic curves (gamma curves);

a reference voltage generator (a combination of “*gamma register 100*” and “*gamma reference voltage generator 200*”) [fig. 2], to receive the coded data (“*digital gamma data*”) [par. (0027) lines 1-5], convert the coded data from digital to analog [par. (0027) lines 5-9], and generate a plurality of reference voltages; and

a driving unit ("*10*") [fig. 1], to receive the reference voltages and accordingly drive the display cells;

wherein the plurality of characteristic curves are gamma curves respectively for three primary colors R, G, B [par. (0008)], and the coding unit generates the plurality of coded data according to the gamma curves respectively for the three primary colors R, G, B at the same time [par. (0032) lines 1-5] (It is noted that digital gamma data for respective R, G, and B colors are obtained based on gamma curves for respective R, G, and B).

As to **claim 2**, Lee teaches the reference voltage generator (a combination of "*gamma register 100*" and "*gamma reference voltage generator 200*") [fig. 2] further comprising a plurality of digital-to-analog converters ("*DAC*") [fig. 3] for digital to analog conversion.

As to **claim 3**, Lee teaches the reference voltage generator further comprising a plurality of sample/latch units ("*gamma register 100*") [fig. 2] for receiving the coded data, sampling/latching the coded data [par. (0027) lines 1-5], and transmitting the coded data to the plurality of digital-to-analog converters [par. (0032) lines 1-5].

As to **claim 4**, Lee [fig. 2] teaches each digital-to-analog converter inputting the coded data through a plurality of control signal lines.

As to **claim 7**, Lee teaches the driving unit being a data driver ("*data driver 10*") [fig. 1].

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claim 5** is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee.

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Lee teaches the reference voltage generator (a combination of “*gamma register 100*” and “*gamma reference voltage generator 200*”) [fig. 2] comprising:

a plurality of sample/latch circuits (“*gamma register 100*”), to receive the encoded data (“*digital gamma data*”) and apply the encoded data received to sample/latch processing for output [par. (0027) lines 1-5];

a plurality of digital-to-analog converters (“*DAC*”) [fig. 3], each having a plurality of control signal lines to perform digital to analog conversion according to the encoded data (“*digital gamma data*”) which is outputted by the sample/latch circuit (“*gamma register 100*”) and received by the control signal lines, thereby obtaining the reference voltages [par. (0027) lines 5-9].

Lee does not expressly teach the reference voltage generator comprising a plurality of buffers.

However, Examiner takes official notice that it is well known in the art to use buffers to amplify signals.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the reference voltage generator of Lee to include a plurality of buffers and to use the buffers to amplify the signals outputted from the D/A converters included in the reference voltage generator, in order to allow the reference voltage generator to reduce the amount of power required for the D/A converters to output signals sufficiently high enough to drive the pixels of the display, by amplifying the signals outputted from the D/A converters with the buffers.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Seokyun Moon whose telephone number is (571) 272-5552. The examiner can normally be reached on Mon - Fri (8:30 a.m. - 5:00 p.m.).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz can be reached on (572) 272-3638. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

August 23, 2007

- s.m.

A handwritten signature in black ink, appearing to read 'Sumati Lefkowitz', with a stylized, flowing script.

SUMATI LEFKOWITZ
SUPERVISORY PATENT EXAMINER